


WHAT IS CLAIMED IS:

- 5  1. An improved polyurethane/geotextile composite which is useful as a liner for canals and ditches comprising a geotextile impregnated with an unfilled polyurethane composition comprising a reaction product of:
- a) a liquid polyisocyanate having an isocyanate content of at least 10% by weight,
 - b) an isocyanate reactive component comprising one or more high molecular weight polyether polyols having from 2 to 10 6 hydroxyl groups and a number average molecular weight of at least 250 to 8,000 and 0 to 10% by weight of a low molecular weight diol or triol having an equivalent weight of 31 to 99, and
 - c) an organometallic catalyst.
- 15 2. The composite of Claim 1, wherein the isocyanate reactive component b) contains no more than 0.1% by weight water prior to reaction with the liquid polyisocyanate a).
- 20 3. The composite of Claim 1, wherein the amounts of component a) and b) are such that the NCO : OH equivalent ratio is from 1.4:1.0 to 0.9: 1.0.
4. The composite of Claim 1, wherein the amounts of component a) and b) are such that the NCO : OH equivalent ratio is from 1.1:1.0 to 1.0:1.0.
- 25 5. The composite of Claim 1, wherein the liquid polyisocyanate has an isocyanate group content of more than 20% by weight.
6. The composite of Claim 1, wherein the liquid polyisocyanate has an isocyanate group content of more than 30% by weight.
- 30 7. The composite of Claim 1, wherein the polyether polyol comprises one or more polyoxypropylene polyethers having a molecular weight of 400 to 4,000 and an average functionality of 2 to 3.

8. The composite of Claim 1, wherein the catalyst comprises a tin compound in the amount of from 0.0001 to 0.05 parts by weight per 100 parts by weight of isocyanate reactive component.

5 9. The composite of Claim 1, wherein the liquid polyisocyanate is an aromatic polyisocyanate.

10 10. The composite of Claim 1, wherein the liquid poly-isocyanate is a polymethylene poly(phenylisocyanate) having an NCO-content of about 30 to 33% and a viscosity of from about 20 mPa·s to 2,000 mPa·s at 25°C.

11. The composite of Claim 1, wherein the isocyanate reactive component b) does not include a low molecular weight diol or triol.

12. The composite of Claim 1, wherein the amount of polyurethane per square meter of geotextile ranges from 1kg to 20 kg.

15 13. The composite of Claim 1, wherein the amount of polyurethane per square meter of geotextile ranges from 2kg to 5 kg.

14. The composite of Claim 1, wherein the thickness of the polyurethane geotextile composite ranges from 50 microns to about 500 microns.

20 15. A process for producing an improved polyurethane geotextile composite useful as a liner for canals and ditches comprising (1) impregnating a geotextile with an unfilled polyurethane composition, the unfilled polyurethane composition comprising the reaction product of:

- 25 a) a liquid polyisocyanate having an isocyanate content of at least 10% by weight,
- b) an isocyanate reactive component comprising one or more polyether polyols having from 2 to 6 hydroxyl groups and a number average molecular weight of at least 250 to 8,000 and 0 to 10% by weight, based on total weight of b), of
- 30 equivalent a low molecular weight diol or triol having an weight of 31 to 99, and

c) an organometallic catalyst,
and (2) allowing the polyurethane composition to cure.

16. The process of Claim 15, wherein two or more polyurethane geotextile composite liners are placed over each other.

5 17. The process of Claim 15, wherein the unfilled polyurethane composition is applied by spraying it onto the geotextile.

10 18. A process for forming a polyurethane geotextile composite comprising applying an unfilled polyurethane composition on a concrete surface of a ditch or canal by spraying and contacting a geotextile with the polyurethane composition in a manner such that a polyurethane geotextile composite can be formed upon curing of the polyurethane and allowing the polyurethane to cure, the unfilled polyurethane composition comprising a reaction product of:

- 15 a) a liquid polyisocyanate having an isocyanate group content of at least 10% by weight;
- b) an isocyanate reactive component comprising one or more polyether polyols having from 2-6 hydroxyl groups and a number average molecular weight of at least 250 to about 8,000 and 0-10% by weight, based on total weight of
- 20 b), of a low molecular weight diol or triol having a hydroxy equivalent weights of from about 31 to 99, and
- c) an organometallic catalyst.

25 19. An improved polyurethane geotextile composite suitable for use as a liner for canals and ditches comprising a geotextile impregnated with an unfilled polyurethane composition, the unfilled polyurethane composition comprising a reaction product of:

- a) a liquid polyisocyanate having an isocyanate content of at least 10% by weight,
- b) a polyol mixture comprising:

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- i) from 5 to 15 parts by weight of a propylene oxide adduct of an amine containing starting component, which adduct has a molecular weight of up to 1000,
- ii) a propylene oxide adducts of a low molecular weight organic compound having from 3 to 6 OH groups which adduct has a molecular weight of no more than 1000,
- 10 iii) a propylene oxide adduct of a low molecular weight diol which adduct has a molecular weight of no more than 3000,

and

- c) from 0.0001 to 0.05 parts by weight per hundred parts by weight of the polyol mixture of a tin catalyst.

20. The composite of Claim 19 in which adduct i) of the polyol mixture has a molecular weight of from 400 to 600, adduct ii) of the polyol mixture has a molecular weight of from 600 to 800 and adduct iii) has a molecular weight of from 1,500 to 2,500.

21. A canal or ditch lined with an improved polyurethane geotextile composite which has been produced by dispensing an unfilled polyurethane composition onto a geotextile, laying the polyurethane geotextile onto a surface of a canal or ditch before the polyurethane composition has fully cured, conforming the polyurethane geotextile to the shape of the surface of the canal or ditch, and allowing the polyurethane composite to fully cure to form a polyurethane geotextile composite liner,

25 the unfilled polyurethane composition comprising a reaction product of:

- a) a liquid polyisocyanate having an isocyanate content of at least 10% by weight,
- b) an isocyanate reactive component comprising one or more polyether polyols having from 2 to 6 hydroxyl groups and a number average molecular weight of at least 250 to 8,000 and 0 to 10% by weight, based on total weight of b),
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a low molecular weight
weight of from 31 to 99
an organometallic cata

c)

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